



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,874	05/30/2000	Michel Ladang	192592USONPP-CONT.	1709

22850 7590 04/01/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

GOFF II, JOHN L

ART UNIT	PAPER NUMBER
----------	--------------

1733

DATE MAILED: 04/01/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/580,874

Applicant(s)

LADANG ET AL.

Examiner

John L. Goff

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 13 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 13, 15, 16, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This action is in response to Amendment C filed on 3/5/03. In view of applicant's arguments the finality of the previous office action is withdrawn, and Amendment C has been entered. In view of applicant's amendment the rejections using Hitchcock, Noda et al., Atchison et al., and Hosoda et al. in view of Hitchcock are withdrawn in favor of Tsujimoto et al. and Tsujimoto et al. in view of Hosoda et al.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 10, 13, 15, 16, 18, and 19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 10 now requires surface-crosslinking only one or both faces of the intermediate polyolefin sheet (See claim 10, line 3). This limitation is present to exclude crosslinking throughout the sheet (See paper #13 page 5, lines 8 and 9). It is unclear where in the specification there is support for this limitation. The specification appears to disclose an intermediate polyolefin sheet whose degree of surface

Art Unit: 1733

crosslinking is greater than the degree of core crosslinking, i.e. the degree of crosslinking decreases into the sheet. However, it is not clear that anywhere in the specification is it contemplated that the degree of core crosslinking is zero. This is evidenced by the specification disclosing it is possible to produce "a foam whose degrees of surface crosslinking and core crosslinking are identical or different" (Specification page 6, lines 13-15) as opposed to the specification disclosing a foam whose degree of core crosslinking is zero. Furthermore, it is unclear what is required by surface-crosslinking only the faces of the polyolefin sheet. Does it mean there is no (0%) core crosslinking of the foam sheet? If there is no core crosslinking what is the depth of the surface-crosslinking? One of ordinary skill in the art would require this information to determine the meaning of surface-crosslinking only the faces of the polyolefin sheet.

5. Claims 10, 13, 15, 16, 18, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 10 requires "surface-crosslinking only one or both faces of the intermediate polyolefin sheet" (See claim 10, line 3). It is unclear what is meant by surface-crosslinking only the faces of the polyolefin sheet. Does it mean there is no (0%) core crosslinking of the foam sheet? If there is no core crosslinking what is the depth of the surface-crosslinking? This information is not apparent from the specification.

Claim Rejections - 35 USC § 102

7. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Tsujimoto et al. (JP 04213341 and the English abstract of JP 04213341).

Tsujimoto et al. are directed to producing a crosslinked polyolefin foam sheet. Tsujimoto et al. teach an intermediate polyolefin sheet comprising polyolefin (e.g. polyethylene, ethylene copolymer, etc.), crosslinking agent, and foaming agent. Tsujimoto et al. teach surface-crosslinking the faces of the sheet and then heating the sheet to expand (foam) and crosslink the sheet (See abstract). Tsujimoto et al. do not specifically recite expanding the sheet in an essentially unidirectional expansion. However, the method steps taught by Tsujimoto et al. are the same as those currently claimed by applicant, and thus, one would expect the results of both applicant's invention and Tsujimoto et al. to be the same, i.e. substantially unidirectional expansion of the sheet.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. in view of Hosoda et al. (U.S. Patent 3,608,006).

Tsujimoto et al. are directed to producing a crosslinked polyolefin foam sheet. Tsujimoto et al. teach an intermediate polyolefin sheet comprising polyolefin (e.g. polyethylene, ethylene copolymer, etc.), crosslinking agent, and foaming agent. Tsujimoto et al. teach surface-crosslinking the faces of the sheet and then heating the sheet to expand (foam) and crosslink the sheet (See abstract). Tsujimoto et al. do not specifically recite the sheet expands in an essentially unidirectional expansion. One of ordinary skill in the art at the time the invention was made would have readily appreciated that the intermediate polyolefin foam sheet with a crosslinked surface taught by Tsujimoto et al. would expand in an essentially unidirectional expansion in view of the teaching by Hosoda et al. that an intermediate polyolefin sheet with its surfaces restricted will expand in one direction.

Hosoda et al. are directed to a process for manufacturing a cross-linked polyolefin foam sheet expanded only in its thickness by adhering supports to one or both sheet faces prior to expansion. Hosoda et al. teach a mixture of polyethylene, blowing agent, and cross-linking agent moulded into the form of a sheet (Figure 1 and Column 1, lines 9-12 and Column 5, lines 10-16). A cloth or paper support is adhered to the sheet perpendicular to the direction of expansion (Figure 1 and Column 1, lines 13-14 and Column 5, lines 16-18). A conveyor carries the sheet into an oven where heat is applied to cross-link and expand the sheet (Figure 1 and Column 4, lines 7-8 and Column 5, lines 19-22). The moulded mixture is at least 20% by weight

Art Unit: 1733

polyethylene (Column 5, lines 10-14). The sheet expands only in its thickness owing to its adhesion with the support (Column 2, lines 7-10).

11. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. as applied above in paragraph 7 or Tsujimoto et al. and Hosoda et al. as applied above in paragraph 10, and further in view of Hitchcock (U.S. Patent 5,087,395).

Regarding claim 13, Tsujimoto et al. as applied above teach all of the limitations in the claim except for a specific teaching on expanding the foam in a continuous operation. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated producing the crosslinked and foamed sheet taught by Tsujimoto et al. using a continuous process as it was well known in the art to do so as shown by Hitchcock and only the expected results would be achieved.

Regarding claim 15, Tsujimoto et al. as applied above teach all of the limitations in the claim except for a specific teaching on the amount of polyolefin in the foam. It is noted Tsujimoto et al. teach the foam sheet may comprise polyethylene. Absent any unexpected results, one of ordinary skill in the art at the time the invention was made would have readily appreciated the polyolefin foam taught by Tsujimoto et al. comprising at least 20% by weight of polyethylene as it was known in the art to use this composition to form a foamed sheet as shown by Hitchcock.

Hitchcock is directed to the continuous expansion of a sheet of polyolefin foam. Hitchcock teaches a mixture of a thermoplastic resin (preferably polyethylene or an ethylene copolymer), a heat-decomposable blowing agent, and a crosslinking agent extruded into a desired shape such as a sheet (Column 4, lines 15-20 and 39-41). The surface of the sheet is

Art Unit: 1733

further crosslinked offline by a suitable radiation source with the crosslinking occurring perpendicular to a direction of expansion of the foam (Column 1, lines 23-27 and Column 2, lines 59-63). The surface crosslinked sheet is fed to a preheating chamber and is raised to a temperature such that the sheet begins to foam and crosslink (due to the crosslinking agent) when passed into the foaming chamber (Column 2, lines 55-59 and Column 3, lines 42-47). The sheet undergoes expansion in its thickness while in the foaming chamber to form a foamed sheet (Figure 1 and Column 3, lines 42-47). The mixture of resin, blowing agent, and crosslinking agent is essentially ethylene copolymer or at least 20% by weight polyethylene (Column 5, lines 30-35 and Column 6, lines 22-27).

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. as applied above in paragraph 7 or Tsujimoto et al. and Hosoda et al. as applied above in paragraph 10, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Tsujimoto et al. as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3 . Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would

Art Unit: 1733

have been obvious to one of ordinary skill in the art at the time the invention was made to form the polyethylene copolymer taught by Tsujimoto et al. using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm³) that is not subject to melt fracture.

13. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. as applied above in paragraph 7 or Tsujimoto et al. and Hosoda et al. as applied above in paragraph 10, and further in view of Noda et al. (U.S. Patent 4,203,815).

Tsujimoto et al. as applied above teaches all of the limitations in claims 18 and 19 except for a specific teaching on crosslinking one or both faces of the foam sheet. It is noted Tsujimoto et al. teach that the faces of the intermediate foam sheet are crosslinked. It would have been well within the purview of one of ordinary skill in the art at the time the invention was made to surface crosslink either one or both faces of the foam sheet taught by Tsujimoto et al. as it was known in the art to crosslink one or both faces depending upon the type of surface desired as shown by Noda et al.

Noda et al. are directed to a process for producing a crosslinked and foamed resin sheet. Noda et al. teach a method for producing the sheet comprising extruding a polyolefin foam mixture into a sheet, crosslinking the surface and/or body of the sheet, and expanding the sheet to produce a crosslinked and foamed resin sheet (Column 5, lines 29-31 and 3-5 and Column 6, lines 27-29 and 43-48). Noda et al. teach the polyolefin foam comprises polyethylene (at least 50% by weight with a density of 0.910 to 0.940) (Column 3, lines 1-15, 18-22, and 60-64). Noda et al. further teach surface crosslinking one or both faces of the sheet depending upon the type of surface desired (Column 6, lines 37-38).

Art Unit: 1733

Response to Arguments

14. Applicant's arguments with respect to claims 10, 13, 15, 16, 18, and 19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on 703-308-2058. The fax phone numbers for the

Art Unit: 1733

organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

John L. Goff

John L. Goff
March 25, 2003

Michael W. Ball

Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700